

#### UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

### REGION 5 CHICAGO REGIONAL LABORATORY

### 536 SOUTH CLARK STREET





Date: 10/2/2017

Subject: Review of Region 5 Data for U.S. Steel - Minntac Tailings Basin Area Facility

To: Water Division, WECA Region 5

77 West Jackson Boulevard

Chicago, IL 60604

From: Amanda Wroble, Chemist

US EPA Region 5 Chicago Regional Laboratory

The data transmitted under this cover memo successfully passed CRL's data review procedures as documented in the current Quality Management Plan and applicable Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation* and the U.S. EPA Region 5 RMD QMP, CRL performs data verification on all the data generated internally. CRL does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.

### **JAMANDA WROBLE**

Digitally signed by AMANDA WROBLE

Date: 2017.10.02.16:25:33-05'00'

Please contact the analyst with any technical report issues, Robert Thompson at (312)-353-9078 for sample project concerns, and Sylvia Griffin at (312)-353-9073 with data transmittal questions. Thank you.

Attached are Results for: U.S. Steel - Minntac Tailings Basin Area Facility

/ /

Data Coordinator and Date Transmitted

#### Analyses included in this report:

Metals ICP-MS (w)

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### **Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, WECA Region 5 77 West Jackson Boulevard Chicago IL, 60604 Project: U.S. Steel - Minntac Tailings Basin Area Facility

Project Number: 02DM17
Project Manager: Dean Maraldo

Reported: Oct-02-17 16:21

#### **ANALYSIS CASE NARRATIVE**

#### GENERAL INFORMATION

CRL received water samples for trace metals analysis by inductively coupled plasma-mass spectrometry (ICP-MS) on September 14, 2017. The assigned work order(s) and sample numbers to which this narrative applies are listed below:

Work Order (number of samples)

Batch Number

1709003 (16)

B17I021

The designated analyst for these samples, Amanda Wroble, can be reached at 312.353.0375. All holding times were met.

The samples were digested using CRL SOP METALS025, Rev. 3 (EPA Method 200.2) and analyzed using CRL SOP METALS001, Rev. 7 (EPA Method 200.8/SW-846 Method 6020B).

#### SAMPLE ANALYSIS AND RESULTS

The data reported herein meet the requirements referenced in the SOP used for analysis and any laboratory specifications stated in the *Quality Assurance Project Plan/Sampling Plan for Environmental Compliance Assessment for U.S. Steel – Minntac Tailings Basin Area Facility* dated August 2017 with a few minor exceptions. Barium was reported from ICP-MS instead of ICP-AES; and chromium, manganese, and molybdenum were reported down to 1.0 µg/L, which was lower than reporting limits specified in the QAPP.

Manganese results for multiple samples exceeded the highest calibration point (500  $\mu$ g/L). Linearity was demonstrated up to 5 mg/L within the run. Manganese results for these samples that were less than the linearity check were reported from the undiluted samples. The manganese result that exceeded the linearity check (1709003-09) was reported from a fivefold dilution.

All analytes were reported from Run 1 with the exception of arsenic, which was reported from Run 2 due to failure of low level quality control audits (laboratory control blank and reporting limit check) for arsenic.

Several analytes were present in the field blank above their respective method detection limits (MDL). No flags were applied to the data, as CRL has no audit limits for field quality control samples.

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#### **QUALITY CONTROL**

Chicago IL, 60604

All quality control audits were within CRL limits for the requested analytes or did not result in qualification of the data.



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77 West Jackson Boulevard Project Number: 02DM17 Reported:
Chicago IL, 60604 Project Manager: Dean Maraldo Oct-02-17 16:21

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	
S01	1709003-01	Water	Sep-12-17 09:57	Sep-14-17 13:26	
S02	1709003-02	Water	Sep-12-17 10:23	Sep-14-17 13:26	
S03	1709003-03	Water	Sep-12-17 10:50	Sep-14-17 13:26	
S04	1709003-04	Water	Sep-12-17 11:08	Sep-14-17 13:26	
D05	1709003-05	Water	Sep-12-17 11:08	Sep-14-17 13:26	
S06	1709003-06	Water	Sep-12-17 11:30	Sep-14-17 13:26	
S07	1709003-07	Water	Sep-12-17 11:51	Sep-14-17 13:26	
S08	1709003-08	Water	Sep-12-17 14:03	Sep-14-17 13:26	
S09	1709003-09	Water	Sep-12-17 15:00	Sep-14-17 13:26	
S10	1709003-10	Water	Sep-12-17 15:15	Sep-14-17 13:26	
S11	1709003-11	Water	Sep-13-17 09:44	Sep-14-17 13:26	
S12	1709003-12	Water	Sep-13-17 09:49	Sep-14-17 13:26	
S13	1709003-13	Water	Sep-13-17 09:55	Sep-14-17 13:26	
S14	1709003-14	Water	Sep-13-17 10:23	Sep-14-17 13:26	
S15	1709003-15	Water	Sep-13-17 11:10	Sep-14-17 13:26	
R16	1709003-16	Water	Sep-13-17 12:52	Sep-14-17 13:26	

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Chicago IL, 60604

### **Environmental Protection Agency Region 5**

## **Chicago Regional Laboratory**

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Water Division, WECA Region 5 77 West Jackson Boulevard Project: U.S. Steel - Minntac Tailings Basin Area Facility

Project Number: 02DM17
Project Manager: Dean Maraldo

Reported: Oct-02-17 16:21

Metals by ICP-MS using EPA 200.8 (modified)
US EPA Region 5 Chicago Regional Laboratory

### S01 (1709003-01) Matrix: Water Sampled: Sep-12-17 09:57 Received: Sep-14-17 13:26

801 (1709003-01)	Matrix: Water	Matrix: water Sampled: Sep-12-17 09:57		Receiv	vea: Sep-14-1				
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	2.64			1.00	"	"	"	"	Sep-21-17
Barium	31.8			10.0	"	п	"	n	Sep-21-17
Beryllium	U			1.00	И	п	n	"	"
Cadmium	$\mathbf{U}$			1.00	"	п	"	n	"
Chromium	U			1.00	n	п	"	н	н
Cobalt	U			0.50	н	п	n	n	"
Copper	U			2.00	"	"	"	"	"
Lead	${f U}$			0.50	Ŋ	п	1)	u	н
Manganese	711			1.00	"	п	n	н	n
Molybdenum	U			1.00	н	п	n	n	"
Nickel	U			1.00	"	"	"	"	"
Selenium	U			2.00	19	н	n	!!	11
Silver	$\mathbf{U}$			1.00	n	n	н	n	н
Thallium	U			0.50	n	11	11	11	н
Zinc	U			10.0	ıı	п	n	n	n

S02 (1709003-02)	Matrix: Water	ix: Water Sampled: Sep-12-17 10:23			Receiv	ed: Sep-14-1			
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	1.11			1.00	н	11	11	11	Sep-21-17
Barium	19.7			10.0	н	н	9	"	Sep-21-17
Beryllium	U			1.00	n.	n	н	11	n
Cadmium	U			1.00	н	71	n	"	n .
Chromium	${f U}$			1.00	В	9		"	"
Cobalt	U			0.50	н	η	n	"	"
Copper	U			2.00	В	н	11	n	n
Lead	U			0.50	n	п	11	п	н
Manganese	20.2			1.00	В	н	п	п	n
Molybdenum	1.17			1.00	н	н	п	n	n
Nickel	1.15			1.00	n	11	н	н	n

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Water Division, WECA Region 5 77 West Jackson Boulevard

Chicago IL, 60604

Project: U.S. Steel - Minntac Tailings Basin Area Facility

Project Number: 02DM17
Project Manager: Dean Maraldo

Reported:

Oct-02-17 16:21

# Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

S02 (1709003-02)	Matrix: Wat	fatrix: Water Sampled: Sep-12-17 10:		12-17 10:23	Receiv	ved: Sep-14-1			
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Selenium	U			2.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Silver	U			1.00	н	н	п	n	"
Thallium	U			0.50	"	"	11	н	"
Zinc	U			10.0	"	н	n	"	"

Matrix: Water	Samp	Sampled: Sep-12-17 10:50		Received: Sep-14-17 13:26				
Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
U			1.00	н	н	"	"	Sep-21-17
18.2			10.0	н	н		.,	Sep-21-17
U			1.00	н	н	n	n .	"
U			1.00	II	H	н	11	H
U			1.00	н	n	9	"	n
4.21			0.50	н	н	n	11	"
U			2.00	н	н	"	"	"
$\mathbf{U}$			0.50	W	n n	!!	11	н
2340			1.00	н	н	в	"	"
2.05			1.00	11	н	н	H	n
3.95			1.00	н	н	11	n	n
U			2.00	н	H	11	"	n
U			1.00	n.	н	#	11	n
U			0.50	н	н	п	п	н
U			10.0	н	и	n	n	н
	Result  U  U  18.2  U  U  U  U  4.21  U  U  2340  2.05  3.95  U  U  U	Flags / Qualifiers  U  U  18.2  U  U  U  U  U  U  U  U  U  U  U  U  U	Flags / Qualifiers MDL  U  U  18.2  U  U  U  U  U  U  U  U  U  U  U  U  U	Result	Result   Qualifiers   MDL   Limit   Units     U	Result   Qualifiers   MDL   Reporting   Limit   Units   Dilution	Result   Qualifiers   MDL   Limit   Units   Dilution   Batch	Result   Qualifiers   MDL   Limit   Units   Dilution   Batch   Prepared     U

S04 (1709003-04)  Analyte	Matrix: Water	Matrix: Water Sampled: Sep-12-17 11:08			Receiv	ed: Sep-14-1			
	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	$\mathbf{U}$			1.00	n.	"	n	n	Sep-21-17
Barium	40.0			10.0	n	n	11	н	Sep-21-17
Beryllium	U			1.00	n .	11	11	11	n
Cadmium	U			1.00	н	н	п	n	н
Chromium	U			1.00	н	11	н	n	п
Cobalt	1.26			0.50	B	п	11	н	n
Copper	U			2.00	и	н	н	11	н

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Chicago IL, 60604

Project: U.S. Steel - Minntac Tailings Basin Area Facility

Project Number: 02DM17
Project Manager: Dean Maraldo

Reported: Oct-02-17 16:21

Metals by ICP-MS using EPA 200.8 (modified)

US EPA Region 5 Chicago Regional Laboratory

S04 (1709003-04)  Analyte	Matrix: Water	Matrix: Water Sampled:			Received: Sep-14-17 13:26				
	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Lead	U			0.50	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Manganese	1530			1.00	В	н	n	n .	n
Molybdenum	3.87			1.00	n	n	11	п	n
Nickel	2.51			1.00	n	n	н	н	н
Selenium	U			2.00	В	и	и	9	"
Silver	U			1.00	n	"	н	н	n
Thallium	U			0.50	11	H	11	"	"
Zine	U			10.0	н	'n	H		11

Matrix: Water		Sampled: Sep-12-17 11:08		Received: Sep-14-17 13:26				
Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
U			1.00	"	ji	11	11	Sep-21-17
40.4			10.0	n	н	11	"	Sep-21-17
U			1.00	"	ii.	"	п	н
${f U}$			1.00	11	71	11	"	"
U			1.00	"	"	н	11	n
1.23			0.50	n	н	11	п	n
U			2.00	n.	n .	н	#	н
${f U}$			0.50	15	71	11	"	n .
1540			1.00	11	11	н	11	"
3.93			1.00	В	n	п	ii .	n
2.47			1.00	n	n	II	n	n
U			2.00	"	,,	н	"	n
U			1.00	н	η	19	"	н
U			0.50	н	н	n	п	н
U			10.0	n	n	"	п	И
	Result  U  U  40.4  U  U  U  1.23  U  U  1.540  3.93  2.47  U  U  U	Flags / Qualifiers   U   U   U   U   U   U   U   U   U	Flags / Result Qualifiers MDL  U  40.4  U  U  U  U  U  U  U  U  U  U  U  U  U	Result   Qualifiers   MDL   Reporting   Limit     U	Result   Qualifiers   MDL   Limit   Units	Result	Result	Flags / Qualifiers   MDL   Limit   Units   Dilution   Batch   Prepared

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Chicago IL, 60604

Project: U.S. Steel - Minntac Tailings Basin Area Facility

Project Number: 02DM17
Project Manager: Dean Maraldo

Reported:

Oct-02-17 16:21

# Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

S06 (1709003-06)	Matrix: Water		Sampled: Sep-12-17 11:30		Received: Sep-14-17 13:26				
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	U			1.00	н	н	n	n	Sep-21-17
Barium	22.3			10.0	n .	"	"	"	Sep-21-17
Beryllium	U			1.00	н	71	"	n	n
Cadmium	U			1.00	"	"	"	"	II
Chromium	U			1.00	11	71	n	n	N.
Cobalt	5.31			0.50	"	"	n	"	11
Copper	U			2.00	н	71	"	n	n
Lead	U			0.50	"	"	"	"	II
Manganese	1130			1.00	n	71	n	n	ŋ
Molybdenum	U			1.00	n	n	"	п	н
Nickel	3.45			1.00	H	n	n	n .	9
Selenium	U			2.00	n	n	"	n .	н
Silver	U			1.00	H	n	n	n	n
Thallium	U			0.50	n.	"	II.	"	п
Zinc	U			10.0	18	71	11	"	H H

S07 (1709003-07)	Matrix: Water Sampled: Sep-12-17 11:51			Receiv	ed: Sep-14-1				
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U	***************************************		1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	1.03			1.00	II .	н	n	n	Sep-21-17
Barium	U			10.0	0	н	п	п	Sep-21-17
Beryllium	U			1.00	II .	н	n	n	Ħ
Cadmium	U			1.00	n	п	и	H.	н
Chromium	U			1.00	II .	п	n	"	n
Cobalt	U			0.50	"	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	н	IF	н
Copper	U			2.00	"	п		"	n
Lead	U			0.50	II .	н	я	11	н
Manganese	117			1.00	9	п	"	н	n
Molybdenum	U			1.00	"	n	н	11	н
Nickel	U			1.00	II .	п	n	n	н
Selenium	U			2.00	н	н	n	n	n
Silver	U			1.00	n	п	"	n	н
Thallium	U			0.50	н	n	n	n	n n

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Chicago IL, 60604

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Project Number: 02DM17
Project Manager: Dean Maraldo

Reported: Oct-02-17 16:21

Metals by ICP-MS using EPA 200.8 (modified)
US EPA Region 5 Chicago Regional Laboratory

S07 (1709003-07)	Matrix: Water	Sampled: Sep-12-17 11:51	Received: Sep-14-17 13:26

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Zinc	U			10.0	ug/L	1	B17I021	Sep-20-17	Sep-21-17

S08 (1709003-08)	Matrix: Water	Samp	led: Sep-1	12-17 14:03	Receiv	ed: Sep-14-1	7 13:26		
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	U			1.00	n	"	11	п	Sep-21-17
Barium	22.9			10.0	н	n	н	n	Sep-21-17
Beryllium	U			1.00	п	п	п	п	п
Cadmium	U			1.00	н	n	п	n	п
Chromium	U			1.00	n	n	н	н	н
Cobalt	0.64			0.50	В	н	п	п	n
Copper	2.05			2.00	11	н	п	п	n
Lead	U			0.50	"	n n	11	11	н
Manganese	217			1.00	B	п	11	и	n
Molybdenum	U			1.00	п	n .	и	#	н
Nickel	2.32			1.00	В	n	n	"	"
Selenium	U			2.00	n	n	п	ii .	н
Silver	U			1.00	н	н	11	n	п
Thallium	U			0.50	n n	n	н	н	н
Zinc	<b>U</b>			10.0	15	71	n	n .	n

09 (1709003-09)	Matrix: Water					Received: Sep-14-17 13:26			
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	14.0			1.00	н	н	n	n .	Sep-21-17
Barium	125			10.0	0	n	"	"	Sep-21-17
Beryllium	$\mathbf{U}$			1.00	H	9	Ŋ		н
Cadmium	U			1.00	n n	η	п	"	н
Chromium	$\mathbf{U}$			1.00	II.	n	n	n	п
Cobalt	3.08			0.50	n	п	11	11	11
Copper	U			2.00	H.	9	Ŋ		И
Lead	U			0.50	n	п	п	n.	п
Manganese	9980			5.00	Ħ	5	n	n	Sep-21-17
Molybdenum	U			1.00	11	1	п	n	Sep-21-17

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Project Number: 02DM17
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Reported: Oct-02-17 16:21

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S09 (1709003-09)	Matrix: Wate	Matrix: Water Sampled: Sep-			Receiv	/ed: Sep-14-1			
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Nickel	2.59			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Selenium	U			2.00	II .	я	и	11	н
Silver	U			1.00	n	п	"	11	н
Thallium	U			0.50	н	11	"	n	n
Zinc	U			10.0	"	"	"	"	п

S10 (1709003-10)	Matrix: Water	Samp	led: Sep-	12-17 15:15	Receiv	ed: Sep-14-1	7 13:26		
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	U			1.00	n	ij	"	II	Sep-21-17
Barium	10.8			10.0	н	71	"	"	Sep-21-17
Beryllium	U			1.00	n	п	11	n .	н
Cadmium	U			1.00	н	п	н	n	n
Chromium	U			1.00	n	ij	"	II	н
Cobalt	0.53			0.50	н	н	n	n	9
Copper	U			2.00	n	n	"	II	н
Lead	U			0.50	n .	n	n	n	n
Manganese	330			1.00	n	n	н	11	11
Molybdenum	U			1.00	H.	n	11	n	n
Nickel	2.37			1.00	n	n	11	n	11
Selenium	U			2.00	n .	9	"	"	n
Silver	U			1.00	Ħ	н	n	n .	н
Thallium	U			0.50	н	n	n	n	n
Zinc	U			10.0	n	n .	и	п	н

S11 (1709003-11)	Matrix: Water	1 1				ed: Sep-14-1			
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	1.52			1.00	n	n	11	"	Sep-21-17
Barium	27.2			10.0	н	"	"	"	Sep-21-17
Beryllium	$\mathbf{U}$			1.00	н	н	n	"	"
Cadmium	U			1.00	н	n	"	11	11
Chromium	U			1.00	11	η	п	"	"
Cobalt	0.75			0.50	п	n	и	n	п

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Oct-02-17 16:21

# Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

Matrix: Water	Samp	Sampled: Sep-13-17 09:44			Received: Sep-14-17 13:26			
Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
U			2.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
U			0.50	В	н	n	n .	n.
522			1.00	"	"	"	"	"
7.52			1.00	В	н	n	0	"
2.18			1.00	В	н	п	"	"
U			2.00	11	н	н	Ħ	И
U			1.00	В	н	n	"	"
U			0.50	и	9	н	11	И
U			10.0	В	н	п	n .	И
	Result  U  U  522  7.52  2.18  U  U	Flags / Qualifiers  U  U  522  7.52  2.18  U  U	Flags / Result Qualifiers MDL  U  U  522  7.52  2.18  U  U	Flags / Qualifiers   MDL   Reporting   Limit     U   2.00     U   0.50     522   1.00     7.52   1.00     U   2.00     U   2.00     U   1.00     U   0.50	Flags / Qualifiers   MDL   Reporting   Limit   Units     U	Result   Qualifiers   MDL   Reporting   Limit   Units   Dilution	Result   Qualifiers   MDL   Limit   Units   Dilution   Batch     U   2.00   ug/L   1   B171021     U   0.50   "   "   "     522   1.00   "   "   "     7.52   1.00   "   "   "     U   2.00   "   "   "     U   2.00   "   "   "     U   1.00   "   "   "     U   1.00   "   "   "     U   1.00   "   "   "   "     U   1.00   "   "   "   "	Result   Qualifiers   MDL   Reporting   Limit   Units   Dilution   Batch   Prepared

S12 (1709003-12)	Matrix: Water	Matrix: Water Sampled: Sep-13-17 09:49				ved: Sep-14-1	7 13:26		
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	2.12			1.00	"	н	11	H	Sep-21-17
Barium	80.6			10.0	"	n n	н	п	Sep-21-17
Beryllium	U			1.00	н	п	n	n	н
Cadmium	$\mathbf{U}$			1.00	n	п	II.	n	н
Chromium	U			1.00	н	н	n	n	п
Cobalt	3.01			0.50	"	n	ii .	н	n
Copper	U			2.00	н	н	11	11	п
Lead	U			0.50	n	п	11	п	н
Manganese	1980			1.00	н	п	n	n	n
Molybdenum	16.1			1.00	9	п	"	п	n
Nickel	2.18			1.00	"	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	н	11	"
Selenium	U			2.00	II .	п	н	n	п
Silver	U			1.00	"	п	"	н	н
Thallium	U			0.50		п	"	"	"
Zinc	U			10.0	II	я	В		H

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## **Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, WECA Region 5 77 West Jackson Boulevard Chicago IL, 60604 Project: U.S. Steel - Minntac Tailings Basin Area Facility

Project Number: 02DM17
Project Manager: Dean Maraldo

Reported:

Oct-02-17 16:21

# Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

S13 (1709003-13)	Matrix: Water	Samp	oled: Sep-1	13-17 09:55	Receiv	ed: Sep-14-1	7 13:26		
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	1.89			1.00	в	н	n	"	Sep-21-17
Barium	37.9			10.0	n	п	"	n	Sep-21-17
Beryllium	$\mathbf{U}$			1.00	n	ii	н	11	н
Cadmium	U			1.00	н	"	n	"	"
Chromium	U			1.00	н	n	н	11	"
Cobalt	2.41			0.50	n	#	"	n	п
Copper	$\mathbf{U}$			2.00	н	9	В		11
Lead	U			0.50	В	n	п	"	п
Manganese	2160			1.00	В	Я	n	n	п
Molybdenum	9.45			1.00	В	11	11	"	п
Nickel	2.24			1.00	n	"	и	п	11
Selenium	U			2.00	п	11	п	n	п
Silver	U			1.00	D	n	II .	н	п
Thallium	U			0.50	В	И	n	n	н
Zinc	U			10.0	n n	ii	n	п	п

S14 (1709003-14)	Matrix: Water	Samp	led: Sep-1	3-17 10:23	Receiv	ved: Sep-14-1	7 13:26		
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U		***************************************	1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	1.21			1.00	n	п	"	п	Sep-21-17
Barium	10.7			10.0	"	и	п	n	Sep-21-17
Beryllium	U			1.00	15	н	n	n .	H
Cadmium	U			1.00	"	9	В	11	n
Chromium	U			1.00	11	н	19	"	"
Cobalt	U			0.50	н	И	В	n	н
Copper	U			2.00	n	п	И	ii .	н
Lead	U			0.50	н	н	n	n	п
Manganese	76.2			1.00	"	И	и	н	n
Molybdenum	U			1.00	н	н	11	n	п
Nickel	U			1.00	n	п	11	II	И
Selenium	U			2.00	В	н	n	n .	и
Silver	U			1.00	"	"	"	n n	н
Thallium	U			0.50	"	н	"	и	н

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## **Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, WECA Region 5 77 West Jackson Boulevard

Chicago IL, 60604

Project: U.S. Steel - Minntac Tailings Basin Area Facility

Project Number: 02DM17
Project Manager: Dean Maraldo

Reported:

Oct-02-17 16:21

# Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

\$14 (1709003-14)	Matrix: Water	· Samp	lea: Sep-1	3-17/10:23	Receiv	ea: Sep-14-1	/ 13:26		
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Zinc	U			10.0	ug/L	1	B17I021	Sep-20-17	Sep-21-17

515 (1709003-15)	Matrix: Water	Samp	oled: Sep-1	3-17 11:10	Receiv	ed: Sep-14-1	7 13:26		
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	1.13			1.00	n	n	"	11	Sep-21-17
Barium	33.7			10.0	"	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ll ll	"	Sep-21-17
Beryllium	$\mathbf{U}$			1.00	II	н	n	n	n
Cadmium	U			1.00	"	n .	"	н	н
Chromium	${f U}$			1.00	15	11	n	"	"
Cobalt	U			0.50	II .	"	н	11	11
Copper	U			2.00	n	п	п	п	н
Lead	U			0.50	н	Я	n	n	n
Manganese	47.4			1.00	n	n	н	н	n
Molybdenum	U			1.00	II .	n	п	11	Ħ
Nickel	U			1.00	n	n	н	н	н
Selenium	U			2.00	н	И	п	n	n
Silver	U			1.00	"	n	н	н	н
Thallium	U			0.50	"	н	n	"	"
Zinc	$\mathbf{U}$			10.0	H	N	и		H

16 (1709003-16)	Matrix: Water	1			Received: Sep-14-17 13:26				
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Antimony	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Arsenic	$\mathbf{U}$			1.00	n .	n n	11	n .	Sep-21-17
Barium	U			10.0	11	n	п	11	Sep-21-17
Beryllium	U			1.00	н	н	п	11	н
Cadmium	U			1.00	n	n	п	п	н
Chromium	U			1.00	Ħ	n	n	n	n
Cobalt	U			0.50	"	n	и	H .	н
Copper	U			2.00	н	21	n	"	n
Lead	U			0.50	н	я	и	n	п
Manganese	U			1.00	15	н	п	n	н

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## **Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, WECA Region 5 Project: U.S. Steel - Minntac Tailings Basin Area Facility

77 West Jackson BoulevardProject Number:02DM17Reported:Chicago IL, 60604Project Manager:Dean MaraldoOct-02-17 16:21

# Metals by ICP-MS using EPA 200.8 (modified) US EPA Region 5 Chicago Regional Laboratory

R16 (1709003-16)  Analyte	Matrix: Water	Sampled: Sep-13-17 12:52			Received: Sep-14-17 13:26				
	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Molybdenum	U			1.00	ug/L	1	B17I021	Sep-20-17	Sep-21-17
Nickel	U			1.00	В	н	n	"	н
Selenium	U			2.00	"	"	n n	"	n
Silver	U			1.00	15	н	1)	"	H
Thallium	U			0.50	и	H	n	11	н
Zinc	U			10.0	n	п	"	"	н

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## **Chicago Regional Laboratory**

536 South Clark Street, Chicago, IL 60605 Phone:(312)353-8370 Fax:(312)886-2591

Water Division, WECA Region 5 Project: U.S. Steel - Minntac Tailings Basin Area Facility

77 West Jackson Boulevard Project Number: 02DM17 Reported:
Chicago IL, 60604 Project Manager: Dean Maraldo Oct-02-17 16:21

#### **Notes and Definitions**

U Not Detected

NR Not Reported

Q QC limit Exceeded